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MPC01 Configuration Software Users Guide

Automotive: Serial Communication

Safety First

This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

- **Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.**
- **If mounting this product requires drilling holes, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.**
- **If this product is mounted with tape or Velcro™, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.**
- **Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owners manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.**
- **For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the NEGATIVE (-) battery post.**
- **If this product uses a remote device to activate or control this product, make sure that this device is located in an area that allows both the vehicle and the device to be operated safely in any driving condition.**
- **Do not attempt to activate or control this device in a hazardous driving situation.**
- **If this product contains strobe light(s), halogen light(s) or high-intensity LED's, do not stare directly into these lights. Momentary blindness and/or eye damage could result.**
- **Use only soap and water to clean the outer lens. Use of other chemicals could result in premature lens cracking (crazing) and discoloration. Lens' in this condition have significantly reduced effectiveness and should be replaced immediately. Inspect and operate this product regularly to confirm its proper operation and mounting condition. Do not use a pressure washer to clean this product.**
- **It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.**
- **FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

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Introduction...

This manual will explain how to program the MPC01 and MPC-NFPA Multi-Purpose Controller using **Whelen MPC01 Configuration Software (Version 1.2.x)**. The procedures for these two models are identical, except where noted. In the context of this manual, the name MPC01 will refer to both models except where noted.

The MPC01 is capable of an almost limitless number of possible configurations, however this does not mean that programming the unit is overly difficult or complicated. What it does mean is that the programmer must pay close attention to the procedures outlined herein. Do not "skim" over any portions of this manual. Be sure to read and understand this entire manual before attempting any programming.

Section I: Installing and operating the configuration software

Before using the configuration software, it must first be installed on a PC or notebook computer (hereafter referred to as the "host"). The following steps explain how to install the configuration software on your host computer.

Note: When computer commands are required to be typed, or on-screen text is being displayed, they will appear like this:

TYPED COMMANDS/ON-SCREEN TEXT WILL LOOK LIKE THIS

When a specific button must be pressed, it will appear between brackets like this:

<ENTER>

1. Be sure that the host computer is turned on and that the cursor is at the DOS prompt. Do not install the configuration software from within Microsoft Windows. Your computer screen should display the following:

C: \>

2. Insert the Configuration Software disk into the host computers 3.5" disk drive. Typically, this drive is referred to as the A: drive, but on some computers, it is known as the B: drive. This manual will assume that the 3.5" drive is the A: drive
3. Type the following:

A: <ENTER>

4. From the A: prompt, type

INSTALL <ENTER>

This command creates a directory called **\WHELEN** and installs all the necessary files in that directory.

5. Now type

CD \ <ENTER>

to return to the root directory. From the **C:** prompt, now type

CD \WHELEN

Your screen should now display this:

C: \WHELEN>

6. Type

1

to start the Configuration Software Program.

Navigating through the configuration software...

Because of the complexity of the configuration software, it is helpful to understand how to navigate through the various levels of the program. The easiest way to accomplish this is to learn that certain "action" keys perform specific functions. Each screen displays the action keys that are currently available along the bottom of every screen. The main action keys are:

- <F1>(Help) Pressing <F1> at any screen will open a Help screen that explains the function of that screen. Press <Page Down> to close the help screen and return to the normal screen.

- <F10>(Save) Pressing <F10> at any screen saves the customer record. It is a good idea to save before moving to a new screen.

- <Page Down> Pressing <Page Down> moves to the next available screen.

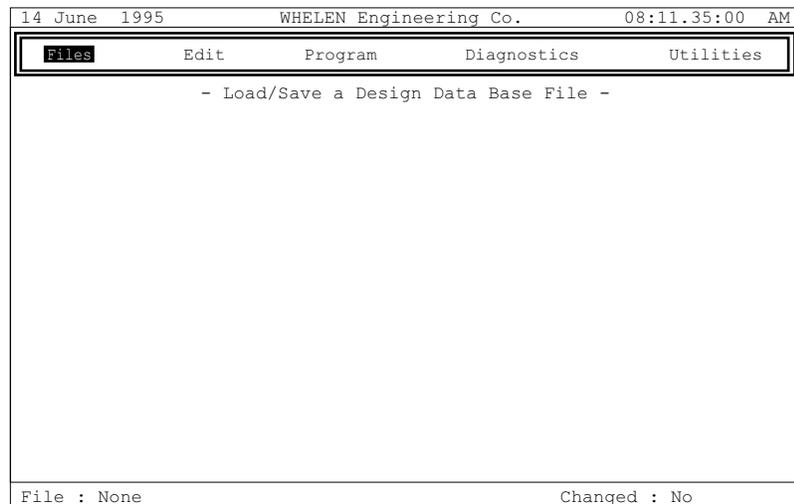
- <Page Up> Pressing <Page Up> moves to the previous screen.

Other action keys will be explained in the sections of this manual that cover those particular screens.

Creating a customer record...

After pressing 1 from the directory C:\WHELEN, the title screen appears. The title screen contains the version number and the software serial number that has been registered to your customer. Press any key to close the title screen and enter the program.

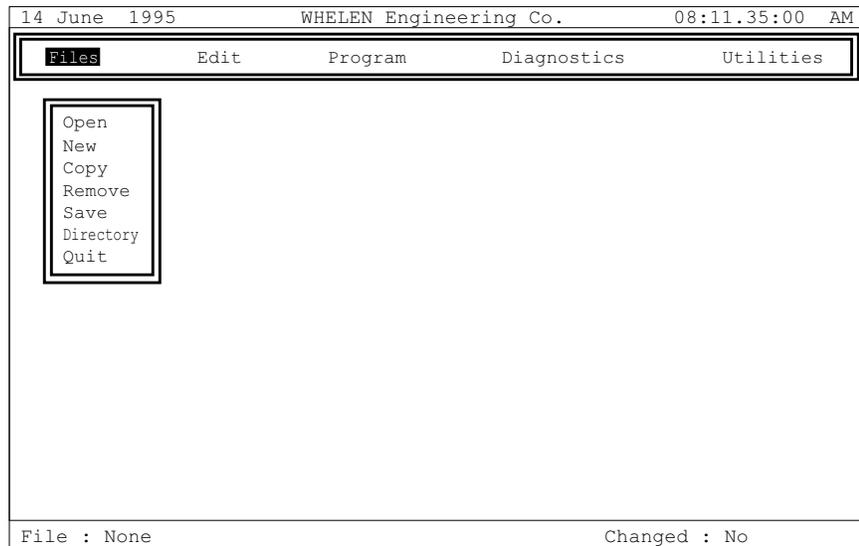
As we will be creating a fictional customer record, we will have to enter fictional customer information, the first step in creating a customer record. The screen before you should look like this:



**Fig. 1:
Main Menu
Screen**

Using the host computer's mouse or arrow keys, highlight the **Files** item and press **<ENTER>**. Pressing **<F>** (for Files) on the keyboard will also open the Files menu. The screen should now look like this:

Fig. 2:
"Files" Menu



Notice the **File : None** in the lower left corner of the screen. This indicates that there is no customer record currently loaded into the program. Highlight **New** (or press **<N>** for New) under the **Files** menu. This creates a blank customer record that will be selected to become our fictional customer record. The lower left corner should now look something like this:

File : C:\WHELEN\MPC00000.BLK

The first customer record is automatically given the computer file name **MPC00000.BLK** when it is created (when **NEW** has been pressed). The next customer record created will have the computer file name **MPC00001.BLK**, and so on. The computer file name displayed in this area identifies the computer file (customer record) that is currently loaded into the software. **NOTE: A computer file must be loaded into the software before it can be viewed or edited.** This is how the software identifies individual customer records. It is not necessary for the programmer to use this, as the customer's name will be used to identify the customer record to the programmer.

The next section will explain how to enter the customer information for our fictional customer record.

Entering customer information...

With computer file **MPC00000.BLK** loaded, highlight **Edit** and press **<ENTER>** (or press **<E>** for Edit). Now from the sub-menu, highlight **Edit** and press **<ENTER>** (or press **<E>** for Edit). The "Customer Information" screen is now displayed.

**Fig. 3:
Customer Information
Screen**

```

14 June 1995           WHELEN Engineering Co.           08:11.35:00 AM
[ ] Customer Information
Name      : .....
Project ID : .....
Vehicle Type : .....
Project Date : .....
Address 1 : .....
Address 2 : .....
City      : .....
State     : .....
Zip       : .....
Telephone : .....
Contact #1 : .....
Contact #2 : .....
Comments  : .....

.....
.....
.....

F1      F10      PgUp      PgDn
[ Help] [ Save] [ Back] [ Done]
File : C:\WHELEN\MPC00000.BLK           Changed : Yes

```

As you can see, there are several information fields that must be filled. The information required is typically as follows:

- Name : customer name
- Project ID : An optional identifier; if a specific project identifier is required, it would be entered here
- Vehicle Type : year, make and model of the vehicle whose system is being programmed
- Project Date : the date the customer record was created
- Address 1 : customer's address
- Address 2 : customer's address cont.
- City : customer's city
- State : customer's state
- Zip : customer's zip code
- Telephone : customers area code and phone number
- Contact #1 : primary customer contact
- Contact #2 : secondary customer contact
- Comments : any specific information regarding the customer

To edit the "Customer Information" screen, highlight the desired field, delete the default information (if any) by pressing <DELETE>, and type in the new customer information. For our fictional customer record, we will use the following information:

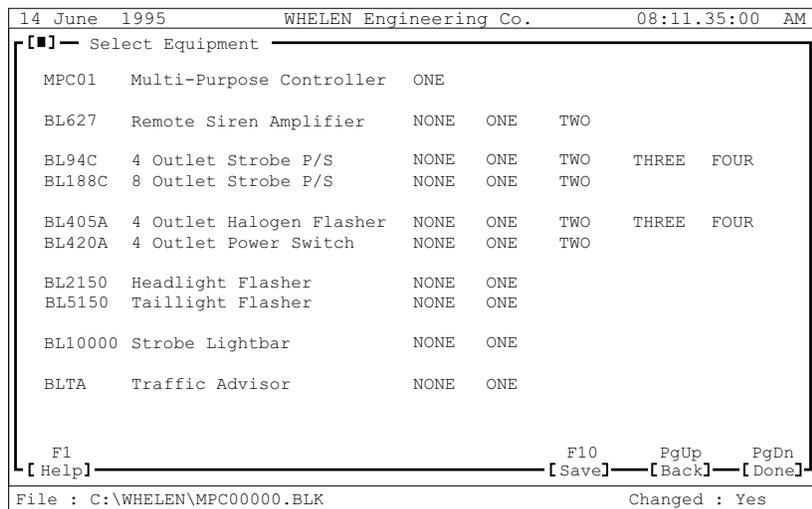
Name : Hazzard County Police
 Project ID : Practice Session
 Vehicle Type : 1995 Ford Crown Victoria
 Project Date : 09/06/95
 Address 1 : Route 145
 Address 2 : Winthrop Road
 City : Chester
 State : CT
 Zip : 06412-0684
 Telephone : (860) 526-9504
 Contact #1 : John Doe (Fleet Manager)
 Contact #2 : Jane Doe (Purchasing Agent)
 Comments : Customer does not want the Piercer siren tone to be enabled.

When all the customer information has been entered, press <F10> to save the record. Now the installed serial communication components must be identified to the MPC01.

Identifying the installed components...

After the customer information has been saved (<F10>), press <PAGE DOWN> to close the "Customer Information" screen, and open the "Select Equipment" screen.

**Fig. 4:
 Select Equipment
 Screen**



As you can see, there are no serial communication components installed, except for the MPC01. The Hazzard County Crown Victoria has the following components installed:

- 2 BL627 Remote Siren Amplifiers
- 2 BL94C Four Outlet Strobe Power Supplies
- 1 BL405A Four Outlet Halogen Flasher
- 1 BL2150 Headlight Flasher
- 1 BL5150 Taillight Flasher
- 1 BL10000 Strobe Lightbar
- 1 BLTA Traffic Advisor

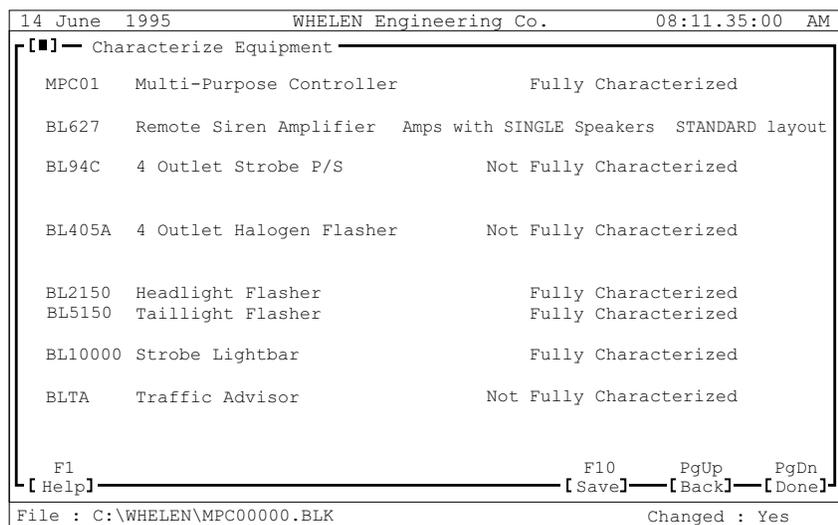
To identify these components, highlight the desired item and, using the Left and Right arrow keys on the keyboard, change "NONE" to the correct quantity. For example, highlight the "BL627" line and change "NONE" to "TWO" (because there are two BL627 installed in this vehicle).

After all of the installed components have been identified, press <F10> to save the record. Now the identified components will be configured.

Configuring the identified components...

After the equipment information has been saved (<F10>), press <PAGE DOWN> to close the "Select Equipment" screen, and open the "Characterize Equipment" screen.

**Fig. 5:
Characterize Equipment
Screen**



As you can see, this screen indicates which components are **Fully Characterized** and which are **Not Fully Characterized**. **Fully Characterized** means that this particular component has a default configuration that will allow it to function with no additional changes. **Not Fully Characterized** describes a component that requires characterization before it will function.

Our fictional customer, Hazzard County Police, has requested a custom configuration for some of their components. Let's start with the MPC01 Multi-Purpose Controller.

Configuring the MPC01 Multi-Purpose Controller..

To configure the MPC01 Control Head, highlight the MPC01 line in the "Characterize Equipment" screen and press <Enter>. This will open the "Characterize MPC01 Control Head" screen.

**Fig. 6:
Characterize MPC01
Control Head Screen**

```
14 June 1995           WHELEN Engineering Co.           08:11.35:00 AM
[■] Characterize MPC01 Control Head

MODEL MPC01           AUX OUTLET 1 : [Unused Outlet]
Control Head          AUX OUTLET 2 : [Unused Outlet]

                     AUX INPUT 1  : [Unused Outlet]
                     AUX INPUT 2  : [Unused Outlet]

                     Beep on Errors:  YES
Switch 8 is Traffic Advisor:  YES

F1                    PgUp          PgDn
[Help]                [Back]        [Done]

File : C:\WHELEN\MPC00000.BLK           Changed : No
```

It is from this screen that labels are applied to Aux Outlets 1 & 2 and Aux Inputs 1 & 2. In brief, the Aux Outlets can be connected to non-serial communication components so that they can be activated through the MPC01. For example, the gunlock in Hazzard County's Crown Victoria could be configured to unlock when the vehicle operator presses switch #5 (See "Configuring the MPC01 Push-button Switches" on Page 21 for details).

Aux Inputs are also labeled in this screen. If a non-serial communication auxiliary component is connected to the Aux Input port on the MPC01, a signal from this component can be configured to turn on installed serial communication component(s). For example: The K-9 temperature sensor will activate specific serial communication components if the vehicle's interior temperature exceeds 90 degrees. For details on how to configure Aux Inputs, see "Programming the Aux Inputs 1 & 2" (Page 22) in Section II: Configuring the MPC01 Controls.

Hazzard County Police has not decided which auxiliary components they will install (if any) on their Crown Victoria. So we will characterize the remaining components and if Hazzard wishes to add aux. components at a later date, the programmer can reconfigure the MPC01. Press <Page Down> to close this screen and return to the Characterize Equipment screen.

Configuring the BL627 Siren Amplifier...

In the "Characterize Equipment" screen, highlight the "BL627" line and press <ENTER>. This opens the BL627 configuration screens.

**Fig. 7:
Select Number of
Speakers Screen**

```

14 June 1995           WHELEN Engineering Co.           08:11.35:00 AM
[■] Characterize BL627
  [■] Select Number of Speakers
  Model      BL627
  Siren Amplifier
  Address    1  ONE  TWO
  Model      BL627
  Siren Amplifier
  Address    2  ONE  TWO
  -----
  Dual Amplifier
  Siren Tones : SYNC  PHASED
  F1 [Help]          PgUp [Back]          PgDn [Done]
  F3 [Spkr]          F4 [Hf]             F5 [Clr]          PgUp [Back]          PgDn [Done]
  File : C:\WHELEN\MPC00000.BLK           Changed : No
  
```

RTON	HORN BUTTON
Test	Car Horn
Coast	Air Horn
Stop	Manual Stop
O/R	HF 3 O/R
O/R	Yelp O/R
O/R	Piercer O/R
rn	AirHorn

The "Select Number of Speakers" screen opens first. Before configuring the siren tones, the number of speakers connected to each BL627 must first be identified. The Hazzard County Crown Victoria has 1 speaker for each amp. Select **ONE** for each BL627. The customer has also requested that the siren tones generated by the BL627's be phased. Press the <Down Arrow> key and select **PHASED**. **NOTE: The SYNC/PHASED option is only available if there are two BL627 amps installed.** Press <PAGE DOWN> to move into the Characterize BL627 screen.

**Fig. 8:
Characterize BL627
Siren Amplifier Screen**

```

14 June 1995           WHELEN Engineering Co.           08:11.35:00 AM
[■] Characterize BL627
  Speakers  1      Tones  Sync'd      Amps  1
  ROTARY SWITCH  AH BUTTON  MAN BUTTON  HORN BUTTON
  RAD           Radio      None       Silent Test  Car Horn
  PA            Standby    AirHorn   Manual Coast  Air Horn
  MAN           Standby    AirHorn   Manual Stop  Manual Stop
  HF            Standby    AirHorn   HF 3 O/R    HF 3 O/R
  WAIL          Wail       AirHorn   Yelp O/R     Yelp O/R
  YELP          Yelp       AirHorn   Piercer O/R  Piercer O/R
  PIER          Piercer    AirHorn   AirHorn      AirHorn
  F1 [Help]          F3 [Spkr]          F4 [Hf]          F5 [Clr]          PgUp [Back]          PgDn [Done]
  File : C:\WHELEN\MPC00000.BLK           Changed : No
  
```

RTON	ROTARY SWITCH	AH BUTTON	MAN BUTTON	HORN BUTTON
RAD	Radio	None	Silent Test	Car Horn
PA	Standby	AirHorn	Manual Coast	Air Horn
MAN	Standby	AirHorn	Manual Stop	Manual Stop
HF	Standby	AirHorn	HF 3 O/R	HF 3 O/R
WAIL	Wail	AirHorn	Yelp O/R	Yelp O/R
YELP	Yelp	AirHorn	Piercer O/R	Piercer O/R
PIER	Piercer	AirHorn	AirHorn	AirHorn

The "Characterize BL627" screen appears as shown. The first row in the blue area of the screen displays the number of speakers connected to each BL627

Speakers 1

the synchronism of the two amps

Tones Phased

and the number of BL627 amps that are installed

Amps 2

This information is based on the data that was entered earlier in the programming procedure and can not be edited from this screen. If the displayed information is incorrect, the programmer must re-enter the data. The **speakers** and/or **Tones** information can be corrected by pressing <F3>. This re-opens the "Select Number of Speakers" screen where the correct data may now be entered. After the correct information has been entered, press <Page Down> to return to the "Characterize BL627" screen. If the **Amps** information is wrong, return to the "Select Equipment" screen by pressing <Page Up> twice. Highlight the **BL627** line and, using the left and right arrow keys, select the correct number of amps. Press <Page Down>, highlight the BL627 line and press <Enter>. Make sure that the number of speakers is correct and that "Phased" was selected. Now press <Page Down> and you are back at the "Characterize BL627" screen. Before continuing, it is a good idea to save your information by pressing <F10>.

The "Characterize BL627" screen shows the default siren tone configuration. These tones are displayed in a grid format and consist of 7 rows and 4 columns. Each row represents each of the 7 positions that can be selected by the rotary switch on the MPC01. These positions are

RADio
Public Address
MANual
Hands Free
WAIL
YELP
PIERcer

The 4 columns represent the 4 different methods of activating a siren tone with an MPC01 control. They are:

ROTARY SWITCH AH BUTTON MAN BUTTON HORN BUTTON

Note: The Rotary Switch column displays any tones generated solely by turning the knob.

The tones displayed in this screen are the tones that are generated by activating an MPC01 control while the Rotary Switch is in a specified position. For example: In the default configuration, pressing the Horn Button while the Rotary Knob is in the PA position generates an air horn tone. This manual describes this particular configuration as PA/Horn Button = Air Horn.

The Hazzard County Police Department, by local ordinance, may not generate the Piercer tone from any county vehicle. Because of this, substitute tones must replace the Piercer tone. They also have requested other substitutions:

From (Default)

YELP/Rotary Switch = Yelp
PIER/Rotary Switch = Piercer
PA/Air Horn Button = AirHorn
YELP/Manual Button = Piercer O/R
MAN/Horn Button = Manual Stop
HF/Horn Button = HF 3 O/R
YELP/Horn Button = Piercer O/R

To (Custom)

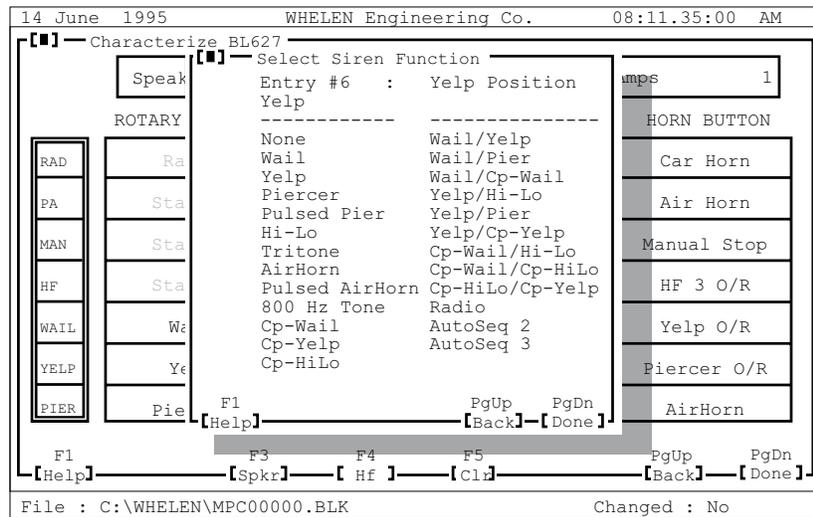
YELP/Rotary Switch = Wail/Yelp
PIER/Rotary Switch = HI-LO
PA/Air Horn Button = Pulsed AirHorn
YELP/Manual Button = Yelp/HI-LO O/R
MAN/Horn Button = Car Horn
HF/Horn Button = HF 2 O/R
Yelp/Horn Button = Cp-Wai/Cp-HiL O/R

These changes are accomplished by highlighting the tone that corresponds to the desired function and pressing <Enter>.

Note: *Default tones that can not be edited are displayed with shaded text; default tones that can be edited are displayed with white text. Tones that have been changed from the default settings are displayed with yellow text.*

Highlight the YELP/Rotary Switch and press <Enter> to open the Select Siren Function screen.

**Fig. 9:
Select Siren Function
Screen**



This screen displays the current configuration for the YELP/Rotary Switch = ? function, which, in the default configuration, is YELP. The customer has requested that when the Rotary Knob is turned to the YELP position, amp #1 will generate a WAIL tone and amp #2 will generate a YELP tone. To program this function, highlight "wail/Yelp" from the list of available tones. You will notice that a description of the tones generated by each BL627 is located above the available tone list (when both amps are configured to produce the same tone, there is no individual amp description). This display reads "Amp #1 Wail / Amp #2 Yelp", which is what the customer requested. Press <Enter> to select this configuration, close the Select Siren Function screen and return to the Characterize BL627 screen. **NOTE: It is important for the programmer to understand that only the tones that are available for a specific "Rotary Switch/Push Button" function will be displayed in the Select Siren Function screen.** Using the customer's change list, the programmer should now change the tones to those desired by the customer.

Most of the available tones should be familiar. However, a brief explanation of some of the tones is necessary.

- Cp-Wail** The Cp-Wail (or Composite-Wail) tone follows the same tonal pattern as the regular Wail tone, but is composed of two, harmonious tones rather than the single tone, Wail signal.
- Cp-Yelp** The Cp-Yelp (or Composite-Yelp) tone follows the same tonal pattern as the regular Yelp tone, but is composed of two, harmonious tones, rather than the single tone Yelp signal.
- Cp-HiLo** The Cp-HiLo (or Composite-HiLo) tone follows the same tonal pattern as the regular HiLo tone, but is composed of two, harmonious tones, rather than the single tone HiLo signal.
- AutoSeq 2** This tone automatically cycles between Wail and Yelp signals.
- AutoSeq 3** This tone automatically cycles between Wail, Yelp and Piercer signals.

As discussed earlier in this manual, some screens have their own, unique action keys. The Characterize BL627 screen has three such keys:

<F3> Pressing <F3> opens the Select Number of Speakers screen. This allows the programmer to change the number of speakers connected to the amps. If there are two BL627 amps installed, the programmer can select if the amps tones are in **SYNC** (synchronous) or **PHASED** (asynchronous).

<F4> Pressing <F4> opens the Define Hand's Free Information screen. This allows the programmer the change the tones that comprise the Hand's Free tone cycle for each installed amp. The default configuration specifies that the Hand's Free mode will cycle from Wail to Yelp to Piercer. Hazzard County Police has requested replacement of the amp #1 Piercer tone with the TriTone signal. They would also like the Piercer tone for amp #2 to be replaced with an 800Hz tone. To make these changes, press <F4> from the Characterize BL627 screen to open the Define Hand's Free Information screen. Highlight Piercer and press <Enter> to open the Select Siren Function screen

<F5> Pressing <F5> returns all BL627 siren tones to their default configuration.

After all of the custom siren tones have been configured, press <F10> to save your information. The programmer may now press <Page Down> to close the "Characterize BL627" screen and return to the "Characterize Equipment" screen.

The next section will explain how to characterize the BL94C 4 Outlet Strobe Power Supply.

Note: The same procedure is used to characterize the BL188C 8 Outlet Strobe Power Supply.

Configuring The BL94C Strobe Power Supply...

To characterize the BL94C, highlight the BL94C line in the "Characterize Equipment" screen and press <Enter>. This opens the "Characterize Strobe Power Supply" screen.

Fig. 10:
Characterize BL94C
Strobe Power Supply
Screen

```
14 June 1995           WHELEN Engineering Co.           08:11.35:00 AM
[■] Characterize Strobe Power Supply (4)
MODEL BL94C           OUTLET 1 :
4 Outlet Strobe       OUTLET 2 :
Power Supply          OUTLET 3 :
  ADDR 0001           OUTLET 4 :

MODEL BL94C           OUTLET 1 :
4 Outlet Strobe       OUTLET 2 :
Power Supply          OUTLET 3 :
  ADDR 0002           OUTLET 4 :

F1                    PgUp      PgDn
[Help]                [Back]   [Done]
```

File : C:\WHELEN\MPC00000.BLK Changed : No

Because two BL94C's were identified (in the "Select Equipment" screen), the "Characterize Strobe Power Supply" screen shows two BL94C's, each with four available outlets. In this screen the programmer will be applying descriptive names to each outlet. These names may be up to three words long and typically describe the mounting location for the strobe lamp connected to a given outlet. In our sample vehicle, for example, Hazzard County has it's strobes identified as follows:

BL94C #1

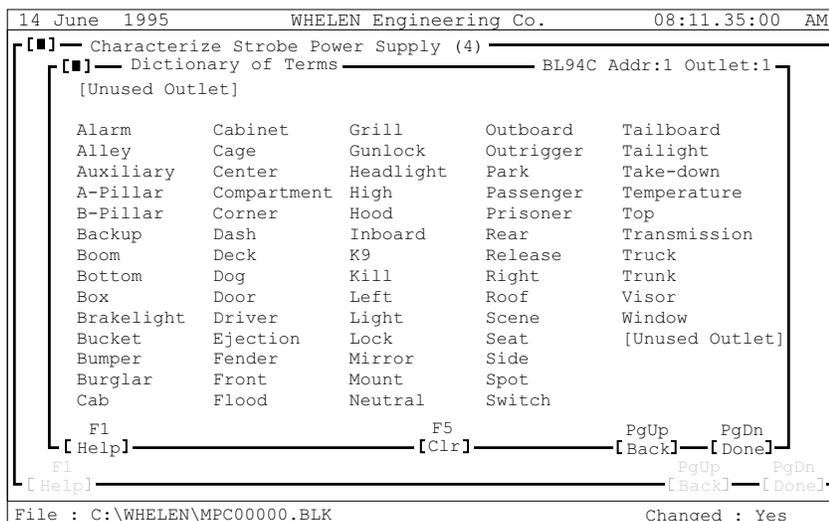
OUTLET 1: Passenger Front Fender
OUTLET 2: Passenger Headlight
OUTLET 3: Driver Headlight
OUTLET 4: Driver Front Fender

BL94C #2

OUTLET 1: Passenger Rear Deck
OUTLET 2: Passenger Taillight
OUTLET 3: Driver Taillight
OUTLET 4: Driver Rear Deck

These labels were applied by highlighting an outlet and pressing <Enter>. This opens the Dictionary of Terms screen.

**Fig. 11:
Dictionary Of Terms
Screen**



To select a word, simply highlight the desired word and press <Enter>. That word now appears in the Label Preview Bar (located immediately above the word list). Repeat this procedure for the second and third words, if needed. If you selected the wrong word(s), or would like to change the label, press <F5> to clear the Label Preview Bar and re-enter the desired word(s). When the Label Preview Bar displays the correct word(s), press <Page Down> to return to the "Characterize Strobe Power Supply" screen. This screen should now display the outlet along with its label. Repeat this procedure for each outlet, according to the customer's requested outlet identification.

There are a few things to understand about this procedure. First, if more than one BL94C is installed, it is important to know which BL94C is #1 and which is #2, to prevent the wrong label from being applied to the wrong outlet. The second is to understand that these are only names being applied to the outlets. These names in no way effect the operation of the BL94C or the network. They are present only to assist the programmer in keeping track of what lamps are connected to what outlets.

After each of the outlets has been labeled, press <F10> to save your information and press <Page Down> to close the "Characterize Strobe Power Supply" screen and return to the "Characterize Equipment" screen.

The next section will explain how to characterize the BL405C 4 Outlet Halogen Flasher.

Configuring the BL405C 4 Outlet Halogen Flasher...

The BL405C is configured using the same procedures as outlined in the preceding section, "Configuring The BL94C 4 Outlet Strobe Power Supply". Configure the BL405A as follows:

BL405A

- OUTLET 1: Passenger Dash**
- OUTLET 2: Driver Dash**
- OUTLET 3: Passenger Taillight**
- OUTLET 4: Driver Taillight**

Note: The same procedure is used to characterize the BL188C 8 Outlet Strobe Power Supply.

The next section will explain how to characterize the BL2150 Headlight Flasher.

Configuring the BL2150 Headlight Flasher...

The BL2150 is pre-configured and needs no additional modifications. The default settings are:

OUTLET 1 : Driver Side Headlight
OUTLET 2 : Passenger Side Headlight

The next section will explain how to characterize the BL5150 Headlight Flasher.

Configuring the BL5150 Taillight Flasher...

The BL5150 is pre-configured and needs no additional modifications. The default settings are:

OUTLET 1 : Driver Side Brakelight
OUTLET 2 : Passenger Side Brakelight
OUTLET 3 : High Mount Brakelight
OUTLET 4 : Backup Light
OUTLET 5 : Auxiliary

The next section will explain how to characterize the BL10000 Light Bar.

Configuring the BL10000 Light Bar...

To configure the BL10000 Light Bar, highlight the BL10000 line in the "Characterize Equipment" screen and press <Enter>. This will open the Characterize BL10000 Light Bar screen.

Fig. 12:
Characterize BL10000
Lightbar Screen

14 June 1995		WHELEN Engineering Co.		08:11.35:00 AM	
Characterize BL10000 Light Bar					
Model Number	Module A	Module B	Module C	Module D	
Unspecified					
Model 10200	4 Strobe	4 Strobe	None	None	
Model 102H0	4 Strobe	4 Strobe	None	4 Halogen	
Model 1020H	4 Strobe	4 Strobe	4 Halogen	None	
Model 102HH	4 Strobe	4 Strobe	4 Halogen	4 Halogen	
Model 102I0	4 Strobe	4 Strobe	None	4 Immobilizer	
Model 102IH	4 Strobe	4 Strobe	4 Halogen	4 Immobilizer	
Model 102HI	4 Strobe	4 Strobe	4 Immobilize	4 Halogen	
Model 1020I	4 Strobe	4 Strobe	4 Immobilize	None	
Model 102II	4 Strobe	4 Strobe	4 Immobilizer	4 Immobilizer	
Model 10300	4 Strobe	4 Strobe	4 Strobe	None	
Model 103H0	4 Strobe	4 Strobe	4 Strobe	4 Halogen	
Model 103I0	4 Strobe	4 Strobe	4 Strobe	4 Immobilizer	
Model 1030H	4 Strobe	4 Strobe	4 Halogen	4 Strobe	
Model 1030I	4 Strobe	4 Strobe	4 Immobilizer	4 Strobe	
Model 10400	4 Strobe	4 Strobe	4 Strobe	4 Strobe	

Do you want the T/A function to be Switch 8? YES

F1 [Help] PgUp [Back] PgDn [Done]

File : C:\WHELEN\MPC00000.BLK Changed : No

This screen displays a list of each of the standard configuration BL10000 Light Bars Whelen offers. Hazzard County Police is using a Model 103H0 light bar, so the programmer would, in this case, highlight the **Model 103H0** line. Normally, the programmer would press

<Enter> to close this screen and return to the "Characterize Equipment" screen. However, there is still some important data that must be entered before continuing.

Near the bottom of the screen, there is the question "Do you want the T/A function to be Switch 8?". This is followed by the default answer, "NO". This means that switch #8 on the MPC01 (second, push-button from the right) will not activate the Traffic Advisor functions, if so equipped. It is recommended that if a Traffic Advisor is present, the programmer should allow switch #8 to control T/A functions. If no Traffic Advisor is installed, then leave the answer "NO". This allows switch #8 to be used for other functions.

To change from "NO" to "YES", the programmer must use the host computers left or right <Arrow Keys> or the mouse to move the cursor to the answer area. With the cursor on top of the current answer, press the left mouse button to change to the desired answer.

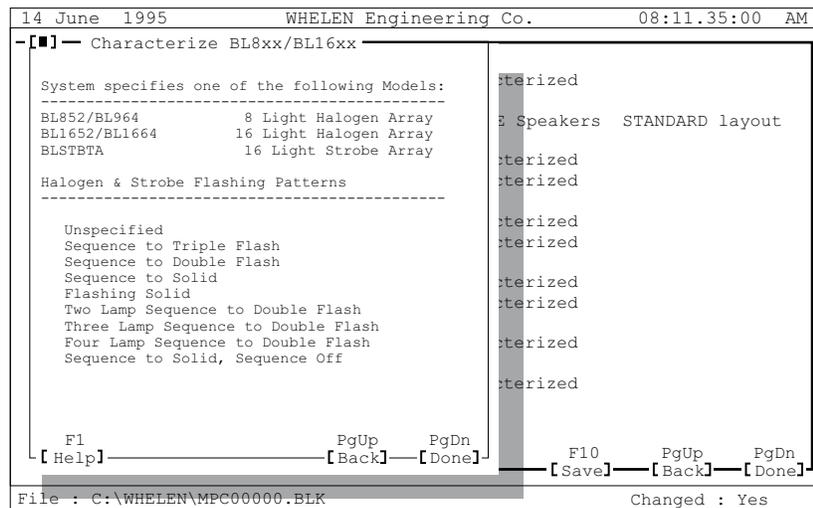
With the correct lightbar highlighted, and the T/A question answered "YES", press <F10> to save the information and <Page Down> to close the "Characterize BL10000 Light Bar" screen and return to the "Characterize Equipment" screen.

The next section will explain how to characterize the BLTA Traffic Advisor.

Configuring the BLTA Traffic Advisor...

To configure the BLTA Traffic Advisor, highlight the **BLTA** line in the "Characterize Equipment" screen and press <Enter>. This will open the "Characterize BL8xx / BL16xx" screen.

**Fig. 13:
Characterize BL8xx/
BL16xx Screen**



Under the Halogen & Strobe Flashing Patterns line, select the desired flash pattern, and press <Enter>. These patterns are self-explanatory, and should already be familiar to the programmer. Hazzard County has requested the "Sequence to Solid, Sequence Off" pattern, so highlight this line and press <Page Down> to return to the "Characterize Equipment" screen.

The next section will explain how to configure the individual MPC01 controls.

Section II: Configuring the MPC01 controls

The MPC01 is comprised of the following:

- 1 Four-position Slide Switch
- 6 Push-button Switches
- 2 Auxiliary Input Ports
- 2 Auxiliary Output Ports
- 1 Power Switch
- 1 Rotary Knob

Each of these, with the exception of the Power Switch and the Rotary Knob, must be programmed to activate the functions that the customer has requested. There are no default settings for these controls, so each must be configured by the programmer.

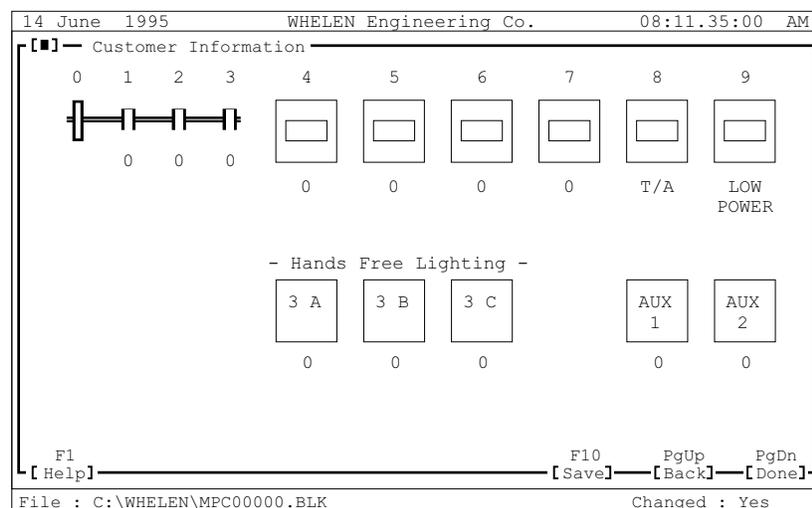
The following is the switch configuration specified by Hazzard County:

- Slide Switch #1 *All forward facing strobe lights are to be active.*
- Slide Switch #2 *All rear facing strobes are to be active.*
- Slide Switch #3 *All strobes to be active.*
- Push-button Switch #4 *All halogen lights to flash at 140sf.*
- Push-button Switch #5 *BL2150 to flash at 60/70.
BL5150 to flash at 60/70.*
- Push-button Switch #6 *Turn on the BL103H0 take-down lights.*
- Push-button Switch #7 *Turn on the BL103H0 alley lights.*

Programming the MPC01 four-position slide switch...

From the "Characterize Equipment" screen, press <Page Down> to enter the Define Switch Operation screen:

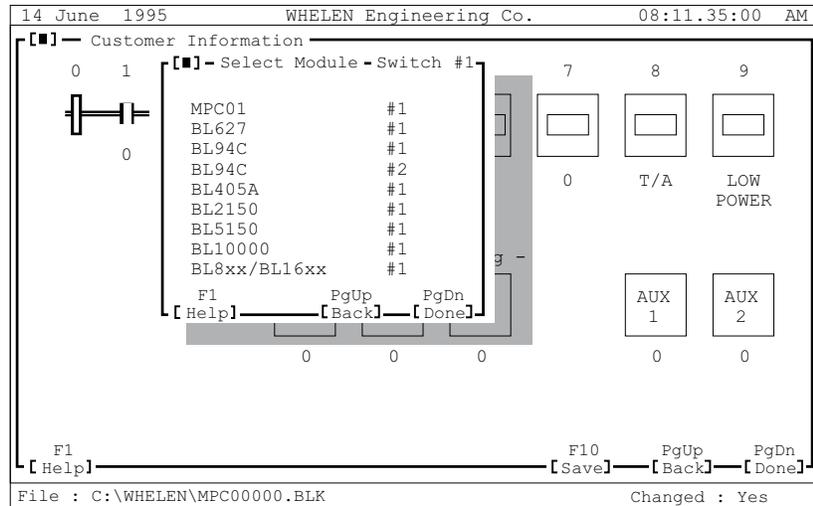
Fig. 14:
Define Switch
Operation Screen



This screen represents the various programmable controls on the MPC01. The horizontal slide bar represents the MPC01 slide switch. As illustrated, it can be seen that the four positions of this switch are graphically represented by the four rectangles positioned along the horizontal bar. The numbers located above these rectangles represent the sequential switch number of that switch position. As shown, the slide switch position furthest to the left, is defined as switch #0. Switch #0 is the OFF position for the slide switches. When the slide switch is in this position, no slide switch functions are active.

The next slide position is switch #1. Because of the wide variety of possible configurations, it is much easier to outline the basic switch configuration procedure. Highlight slide switch #1 and press <Enter>. This opens the Select Module screen:

Fig. 15:
Select Module Screen



The Select Module screen contains a list of all the installed serial communication components that may be activated by moving the Slide switch to the Switch #1 position. The number following the component name indicates the assigned address for that component. Because Hazzard County has two BL94C power supplies, there are two separate BL94C's shown. This allows the specific outlets of either BL94C to be activated with Switch #1.

Note: Although there are also two BL627 Siren Amplifiers present, only one is listed. This is because the only configuration choice for the BL627 is whether or not the user wishes to enable the Remote Activation feature. This feature does not differentiate between the two amps.

To configure a component, highlight the desired component name and press <Enter>. This opens a configuration screen that differs from component to component. The following demonstrates the configuration for the Slide Switch #1 (based upon our fictional customer's installed equipment):

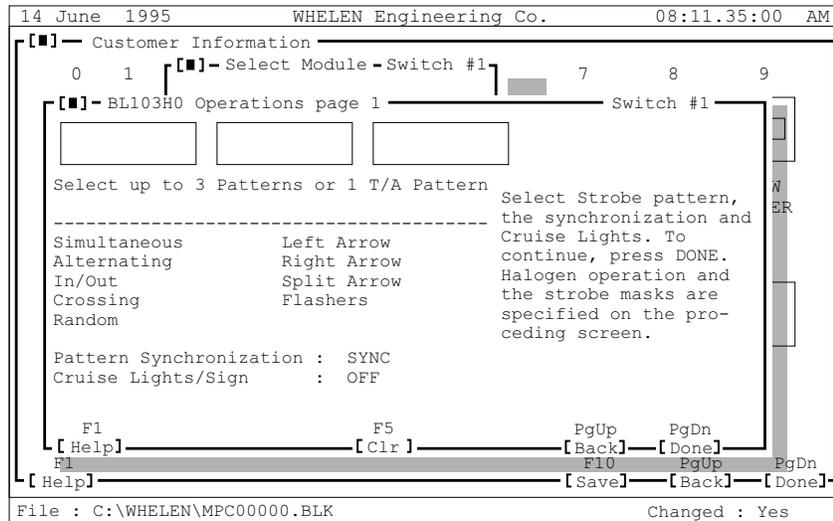
Configuring switch #1 for custom operation...

(Slide Switch #1 All forward facing strobe lights are to be active.)

Highlight Slide Switch #1 and press <Enter>. From the Select Module screen, highlight the BL94C #1 line and press <Enter>. This opens the Outlet Status screen. Turn all outlets to the ON position. Press <Page Down> to return to the Select Module screen.

Highlight the BL10000 line from the Select Module screen. This opens the BL10000 Operation screen:

**Fig. 16:
BL10000 Operations
Screen (Page 1)**



From this screen you may configure the BL10000's flash pattern so that when the slide switch is moved to #1 position, one of the following occurs:

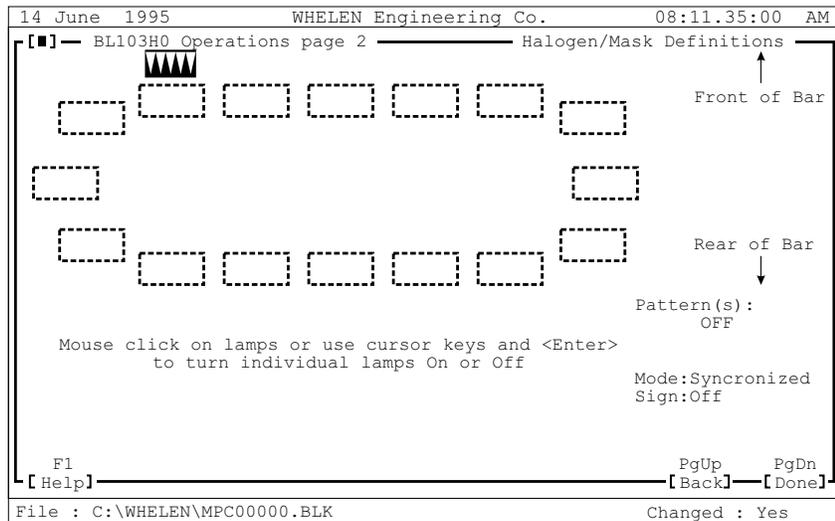
1. BL10000 flashes in one pattern
2. BL10000 alternates between two patterns
3. BL10000 cycles between three patterns
4. Traffic Advisor (if equipped) flashes in one of four T/A patterns

Besides being able to select the flash patterns, you can also determine if these patterns are synchronized or phased. For example: Hazzard County selects a simultaneous pattern. If the pattern synchronization is set to **SYNC**, the BL10000 will alternate between flashing the front of the bar and flashing the rear of the bar. If **PHASED** is selected, the Flash pattern will begin the same way but will become more random and out of sync. After 50 seconds of increasingly random flashing, the pattern will return to its original front/back sequence and will begin the cycle all over again. To change the pattern synchronization, highlight the default setting with either the host computer's mouse or use the **<Space Bar>** to cycle through the various patterns and settings. With the **Pattern Synchronization** highlighted, press **<Enter>** or click the left mouse button to change the setting.

From this screen, you also determine if the BL10000's cruise or sign lights are turned on with Switch #1. Highlight this question and press **<Enter>** or click the left mouse button to select your choice.

When all of your choices have been made, press **<F10>** to save your settings and **<Page Down>** to move to page 2 of the BL103H0 Operations screen.

**Fig. 17:
BL10000 Operations
Screen (Page 2)**



This screen is a graphical representation of the BL10000 lightbar. From here the programmer can get a rough idea of how the flash pattern will appear on the actual lightbar.

Note: This screen will not display the PHASED synchronization pattern.

The programmer must also be aware that individual lamps can be turned on and off from this screen. Position the mouse on a lamp and click the left mouse button to turn that lamp on or off. Flash rates for some lamps can also be changed from this screen. Use the mouse to change the flash rate. Repeat the left mouse click until the desired flash rate is displayed. If no mouse is present, use the host computer's arrow keys to move the lamp indicator (white triangles w/black background) and press <Enter> to effect the change. When the desired configuration has been achieved, press <Page Down> to close this screen and return to the Select Module Screen.

Programming the MPC01 push-button switches...

The MPC01 has six push-button switches located on its control panel. These switches are programmed in the exact same manner as outlined in the "Programming the MPC01 four-position slide switch" section (Page 18). There are, however, two switches that are exceptions; switches #8 and #9 (see Fig. 14). Switch #9 activates the Low Power mode for all the lighting equipment installed on the network. This switch can not be programmed to perform any other function.

Switch #8's configuration was actually determined in the "Do you want the T/A function to be Switch 8?" that appears during the BL10000 configuration screen (see Fig. 12). If the programmer answered "Yes", this switch will only activate the Traffic Advisor. If the programmer answered "No", this switch can be programmed as any of the other switches (#4 through #7).

Now, using the customer's switch configurations outlined in the beginning of section II, configure each of the MPC01 switches so that the desired results are defined.

Programming the MPC01 “Hands-free” lighting controls...

As shown in Fig. 14, there is a section labeled “**Hands Free Lighting**” that includes three selections: 3A, 3B and 3C. The hands-free lighting works in much the same way as hands-free siren. Whereas hands-free siren (in its default setting) cycles through three siren tones (I.E. WAIL, YELP and PIERCER), hands-free lighting cycles through three custom, light configurations. These configurations are specified from within the 3A, 3B and 3C sections (See Fig. 14). The hands-free settings are configured in the same manner as outlined in the “Programming the MPC01 four-position slide switch” section.

The programmer should be aware that the hands-free lighting sequence is initiated when the MPC01 slide switch is moved to position #3, while the rotary knob is in the **HF** position. When the slide switch is moved to position #3, the configuration specified by the programmer for that position is activated, just as the configurations for positions #1 or #2 are activated when the slide switch is moved to either of these positions. The hands-free cycle does not begin until the vehicle operator presses the vehicle’s horn button (or presses the MAN button on the MPC01 control panel). This begins the hands-free lighting cycle.

Note: The hands-free siren functions are activated along with the hands-free lighting functions and will cycle through its configurations as the hands-free lighting patterns are cycled.

The cycle begins with the lighting pattern configured under 3A. If the vehicle operator presses the vehicle’s horn ring, the lighting sequence changes to the configuration set under 3B. Another press of the horn ring changes the sequence to 3C. Another press, and the cycle begins again with 3A. Two rapid taps on the horn ring will end the hands-free lighting sequence. At that point, the various components configured for slide switch #3’s normal operation are re-activated. As with any slide switch, #3’s activation ends when the slide switch is moved to another position.

Programming the Aux Inputs 1 & 2...

Locate the AUX1 and AUX 2 areas in the Define Operations screen (Fig. 14). Highlight AUX 1 with the **<Space Bar>** or mouse and press **<Enter>**. This opens the Select Module screen. From this screen, the programmer can determine which components will be activated by the item connected to aux input #1. For example, Hazzard County wants the K-9 temperature sensor to activate a special K-9 alarm tone. To accomplish this, the programmer highlights the BL627 line in the Select Module screen and presses **<Enter>**. This opens a screen that lists the available functions that the BL627 can perform when it receives a signal from the aux #1 component. Repeat procedure for AUX #2 (if needed).

Section III: Transferring and Extracting Data

Connecting the Host Computer to the MPC01...

In order to transfer or extract data to/from the MPC01, it must first be connected to the host computer. To accomplish this, the programmer must use the Whelen RS24C communication harness. Plug either the DB25 connector (Item 2) or the DB9 connector (Item 3) into the host computer's COM port. The type of connector used is determined by the type of COM port the host computer has. Now plug the other end of the connector into the RS24C as shown in the above illustration. Insert the appropriate power cord into the RS24C and into the power source to be used.

Turn the MPC01 power switch to the OFF position. Using the RS24C Network Harness, connect the Phoenix connector to the RS24C. Now plug the other end of the harness into the J7 and J8 ports located on the bottom of the MPC01.

The MPC01 is now connected to the host computer, but before any data transfer can take place, the MPC01 must be in a special, transfer mode. To accomplish this, the following steps must be executed:

To transfer a customer file from the host computer to the MPC01...

1. Be sure the MPC01 power switch is OFF.
2. Make sure that the MPC01 Configuration Software is running on the host computer and that the customer file to be transferred is loaded.
3. Turn the Rotary Knob to the RAD position.
4. Simultaneously press and hold both the AIR HORN button and push-button #9 (the low power activation button). Do not release these buttons yet.
5. Now turn the MPC01 power switch to the ON position. The buttons being held down can now be released. The MPC01 is now in the data transfer mode.

Note: To place an MPC-NFPA controller into data transfer mode, the programmer will use the vehicle's "Master Optical Warning System" switch to apply power to the controller.

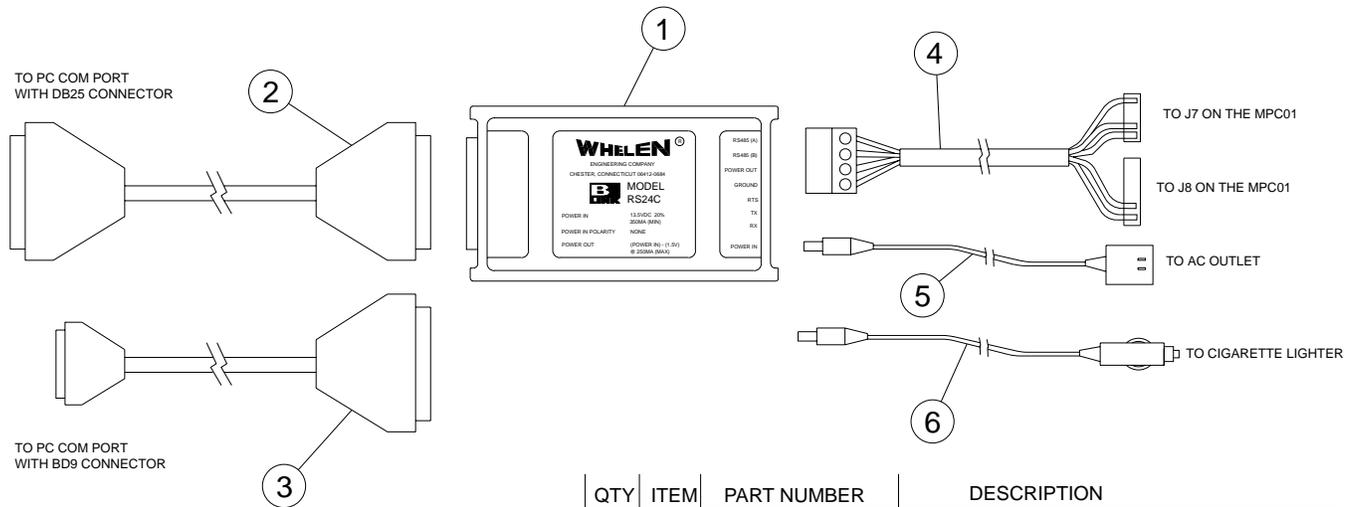
If this procedure was successful, the three LED lights above the slide switch will now be flashing. The MPC01 is now in the data transfer mode. If these lights are not flashing, repeat all of the above steps.

Note: When the MPC-NFPA controller is in data transfer mode, the "Clear" and "Block" LED's will flash.

From the main menu (Fig. 1) select `Program` and from the sub-menu select `Transfer`. This transfers all of the information (the customer's requested MPC01 configuration) from the host computer to the MPC01. A message will appear letting the programmer know when the transfer is complete and if the transfer was successful or not.

If the transfer was successful, turn the MPC01 power switch to OFF and disconnect the MPC01 from the host computer. The MPC01 may now be installed in the vehicle.

If the transfer was not successful, check all of the connections between the MPC01 and the host computer. Repeat the transfer process again. If the second attempt fails, confirm that the correct COM port on the host computer is being used. To do this, highlight the `Utilities` item and press `<Enter>`. Highlight `COM Port Select` and press `<Enter>`. This opens a screen that shows which COM port was being used to transfer the data. If this is not the port that is connected to the MPC01, select the correct port or re-connect the cable to the port shown on the screen.



QTY	ITEM	PART NUMBER	DESCRIPTION
—	—	01-1067756-00	RS24C, RS232 TO RS485 CONVERTER
1	1	01-0267756-00	RS24C, RS232 TO RS485 CONVERTER
1	2	01-1216226-00	MALE TO FEMALE DB25 CABLE
1	3	01-1216227-00	DB9 TO DB25 CABLE
1	4	46-0941896-00	RS24C NETWORK HARNESS
1	5	44-0114016079	14V TAMURA AC TO DC SUPPLY
1	6	02-0216211-00	CIGARETTE LIGHTER ADAPTER

To extract a customer file from the MPC01 to the host computer...

1. Place the MPC01 into the data transfer mode by following the procedure outlined in the previous section.
2. Because data is to be transferred from the MPC01 to the host computer it is important that there is not an existing customer record currently loaded into the MPC01 configuration software. Before extracting any data, highlight **Files** and select **New** to create a new, blank customer record into which the extracted data may be placed.
3. From the main menu (Fig. 1) select **Program**, and from the sub-menu select **Extract**. This extracts all of the configuration information that is currently loaded into the MPC01 and installs it into the host computer, where it may be viewed and edited.
4. The Extract procedure uses the same error and success screens as does the Transfer procedure. If the process was a failure, follow the same troubleshooting procedures as those for the Transfer procedure.